BEHAVIORAL ECONOMICS AND HEALTH DELIVERY

Matilda White Riley Lecture OBSSR 20th Anniversary NIH

June 23, 2015

Kevin Volpp, MD, PhD

Penn LDI CHIBE

Center for Health Incentives and Behavioral Economics, Leonard Davis Institute

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Richard Suzman 1943-2015

Moving provider payment from fee for service for volume towards health improvement. . .

- HHS Secretary Burwell Announcement Jan 26, 2015
  - 30% of Medicare payments tied to alternative payment models (ACOs or bundles) by 2016, 50% by 2018

- *In alternative payment models, providers are accountable for the quality and cost of care for the people and populations they serve, moving away from the old way of doing things, which amounted to, "the more you do, the more you get paid."*

We spend more than any other country but rank poorly on measures of health status

COUNTRY RANKINGS

- Top 2*
- Middle
- Bottom 2*

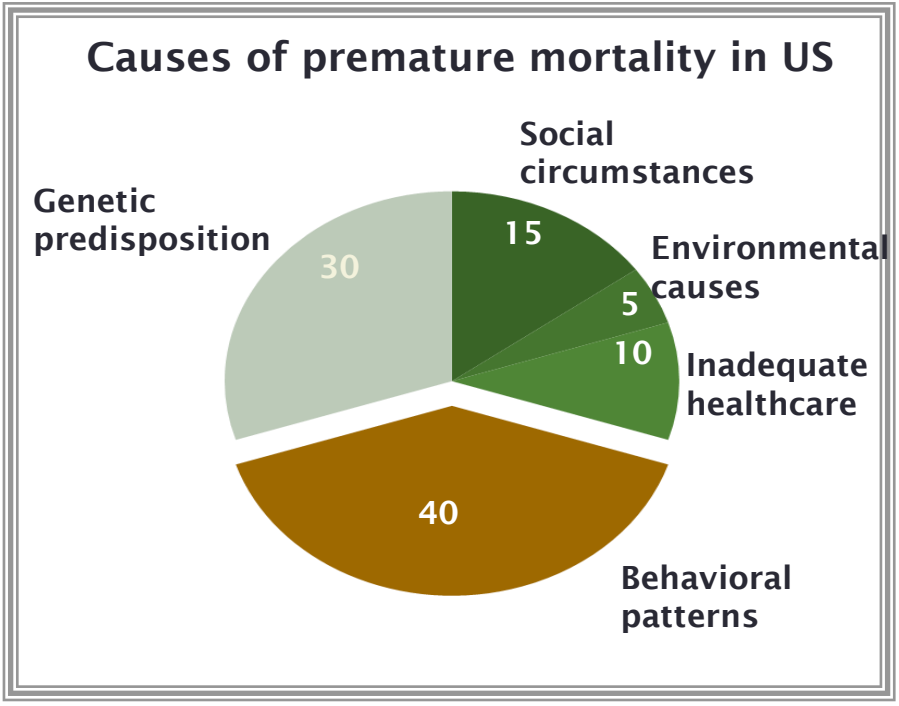
	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING (2013)	4	10	9	5	5	7	7	3	2	1	11
Quality Care	2	9	8	7	5	4	11	10	3	1	5
Effective Care	4	7	9	6	5	2	11	10	8	1	3
Safe Care	3	10	2	6	7	9	11	5	4	1	7
Coordinated Care	4	8	9	10	5	2	7	11	3	1	6
Patient-Centered Care	5	8	10	7	3	6	11	9	2	1	4
Access	8	9	11	2	4	7	6	4	2	1	9
Cost-Related Problem	9	5	10	4	8	6	3	1	7	1	11
Timeliness of Care	6	11	10	4	2	7	8	9	1	3	5
Efficiency	4	10	8	9	7	3	4	2	6	1	11
Equity	5	9	7	4	8	10	6	1	2	2	11
Healthy Lives	4	8	1	7	5	9	6	2	3	10	11
Health Expenditures/Capita, 2011**	$3,800	$4,522	$4,118	$4,495	$5,099	$3,182	$5,669	$3,925	$5,643	$3,405	$8,508

Notes: * Includes ties. ** Expenditures shown in $US PPP (purchasing power parity); Australian $ data are from 2010.

Source: Calculated by The Commonwealth Fund based on 2011 International Health Policy Survey of Sicker Adults; 2012 International Health Policy Survey of Primary Care Physicians; 2013 International Health Policy Survey; Commonwealth Fund *National Scorecard 2011;* World Health Organization; and Organization for Economic Cooperation and Development, *OECD Health Data, 2013* (Paris: OECD, Nov. 2013).

Individual behavior is a key driver of health and health costs

- 71% of US population is overweight or obese
- Smoking is the leading cause of preventable mortality – 438,000 deaths per year
- 75% of ~$3 trillion in health care spending is tied to obesity, type 2 DM, CAD, and cancer



Source: Schroeder SA. N Engl J Med 2007; 357:1221-1228; McGinnis JM et al Health Affairs 2002; 21: 78-93.

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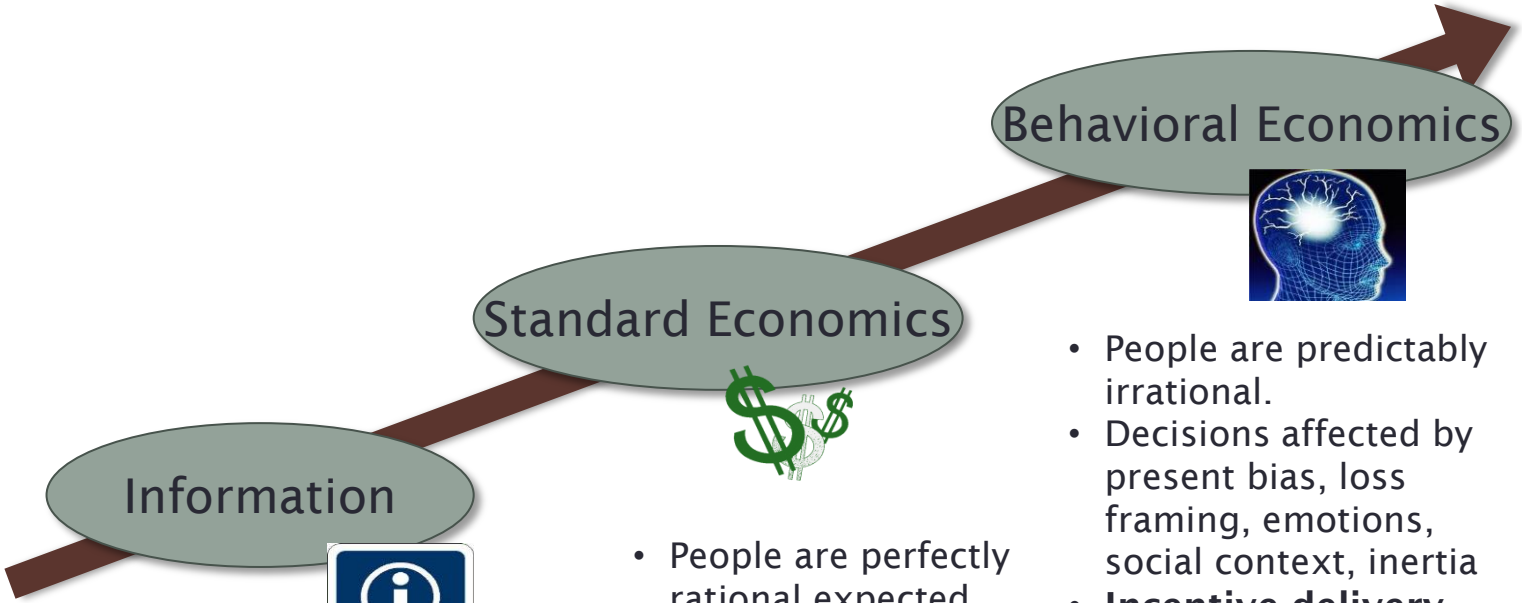
The science of motivation has evolved



- If people know what to do, they will do it.
- **Education is what matters**

- People are perfectly rational expected value maximizers
- **Size of reward is what matters**

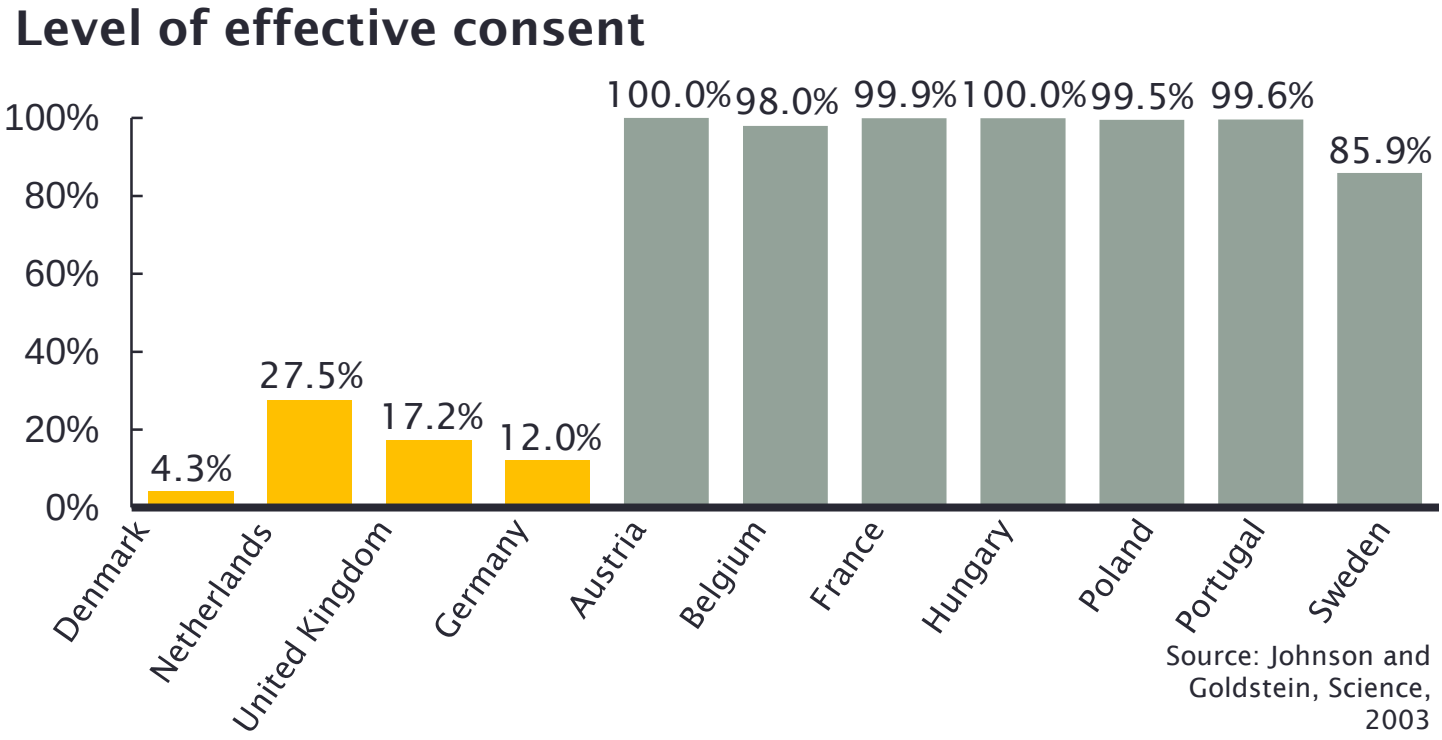
- People are predictably irrational.
- Decisions affected by present bias, loss framing, emotions, social context, inertia
- **Incentive delivery and design and choice environment are critical**

Incorporating Common Decision Errors Can Improve Program Design

Decision Error	Example Solution
Present-biased preferences (myopia)	Make rewards for beneficial behavior frequent and immediate
Framing and segregating rewards	$100 reward likely more effective than $100 discount on premium
Overweighting small probabilities	Provide probabilistic rewards (e.g., lottery) for self-interested behavior
Regret aversion	Tell people they would have won had they been adherent
Loss aversion	Put rewards at risk if behavior doesn't change
Status quo bias	Modify path of least resistance

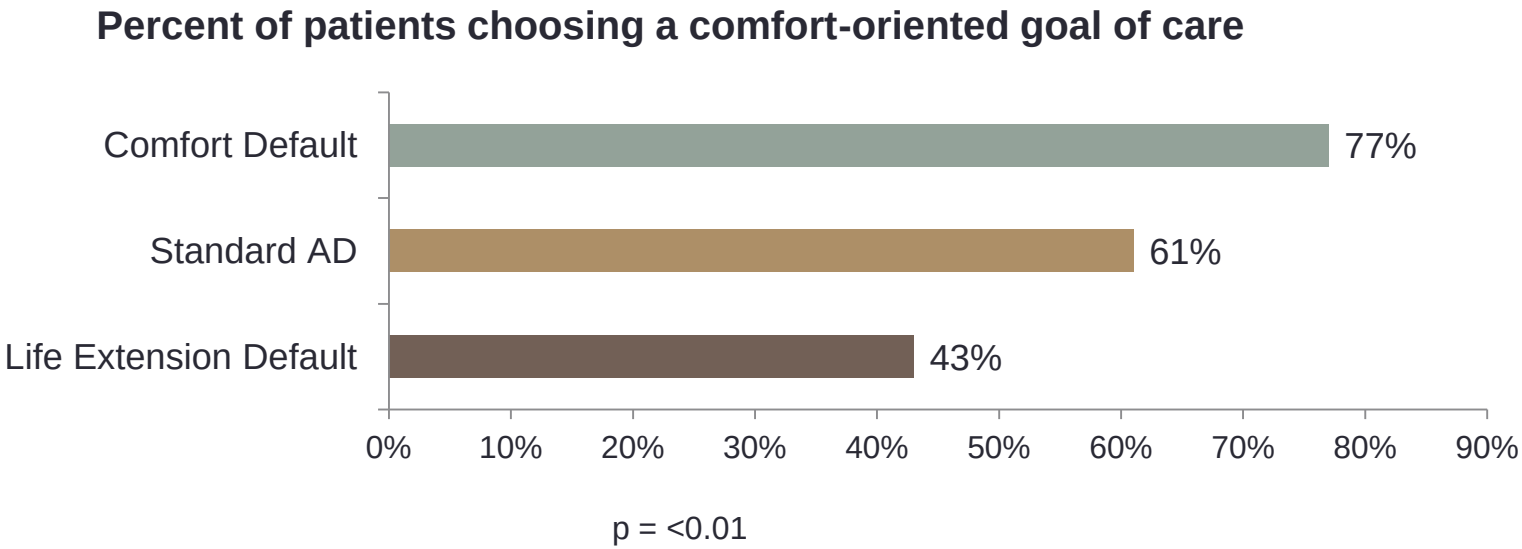
Loewenstein, G., Brennan, T. and Volpp, K. (2007). Protecting People from Themselves: Using Decision Errors to Help People Improve Their Health. *JAMA*. *298*(20), 2415-2417; Volpp, Pauly, Loewenstein, Bangsberg, (2009) Pay for Performance for Patients. Health Affairs 28(1): 206-14

Default bias → 'Opt out' policies result in much higher rates for organ donation



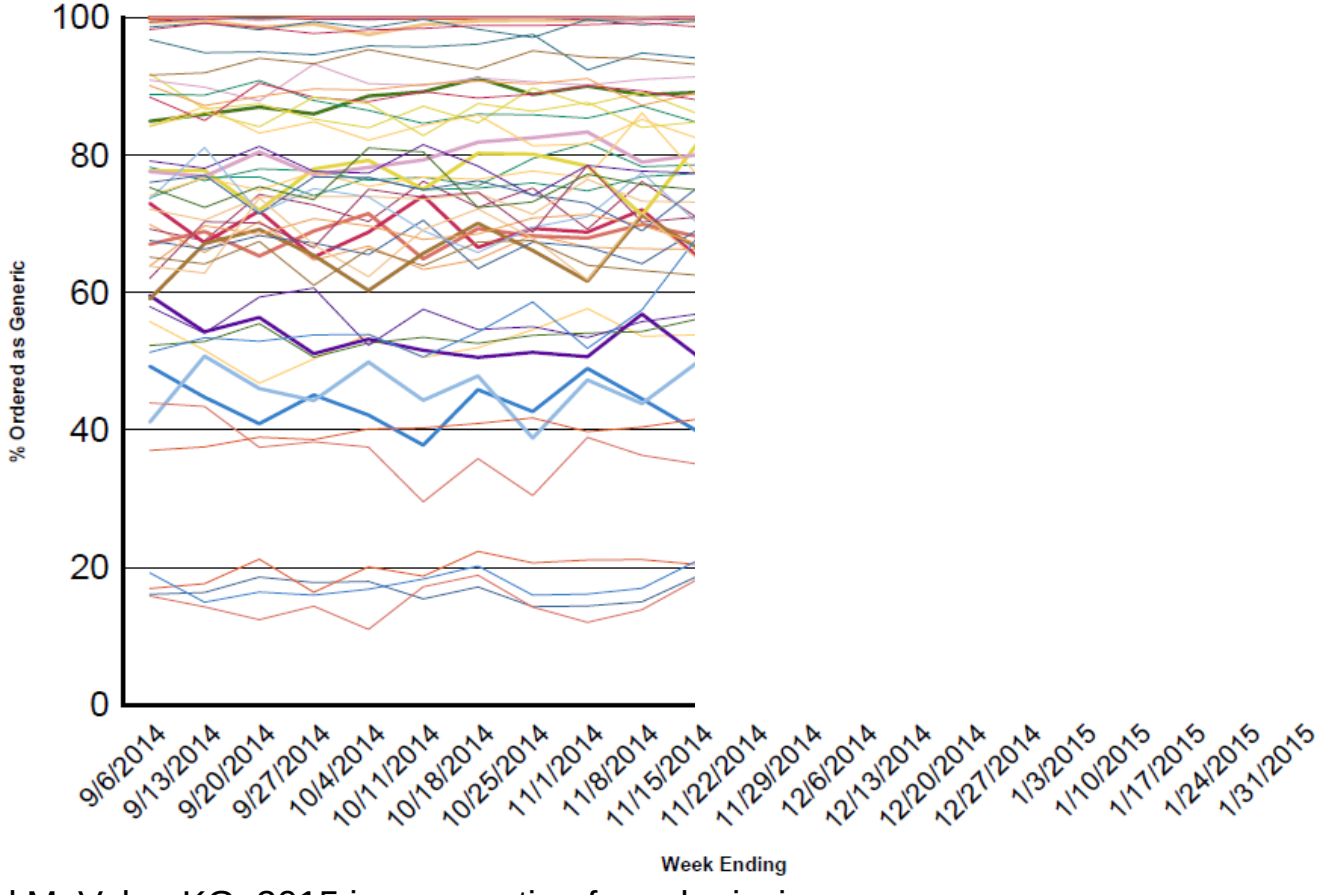
Source: Johnson and Goldstein, Science, 2003

Defaults make a big difference in what people choose – even when stakes are high



Halpern SD, Loewenstein G, Volpp KG, et al. How ingrained are seriously ill patients' preferences for end-of-life care? *Health Affairs* 2013

Rates of generic prescribing heavily influenced by changes in defaults



Patel M, Volpp KG. 2015 in preparation for submission

Active Choice as a good approach when applying an opt out default isn't an option

Active Choice

100% more members enrolled in auto-refill using Enhanced Active Choice

OPT-IN

"Press 1 if you would like to be transferred to a Customer Care Representative now."

or

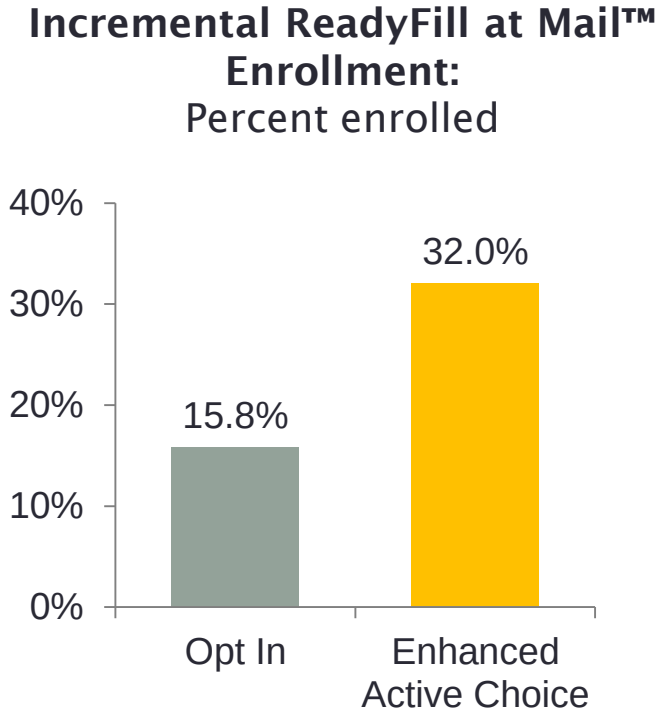
"Press 2 if you are not interested."

ENHANCED ACTIVE CHOICE

"Press 1 if you prefer to refill your prescriptions by yourself each time."

or

"Press 2 if would you prefer us to do it for you automatically."



Keller, Harlam, Loewenstein, Volpp. Journal of Consumer Psychology. 2011; 21: 376-383

CVS CAREMARK

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Medical Plan Comparison Chart Continued

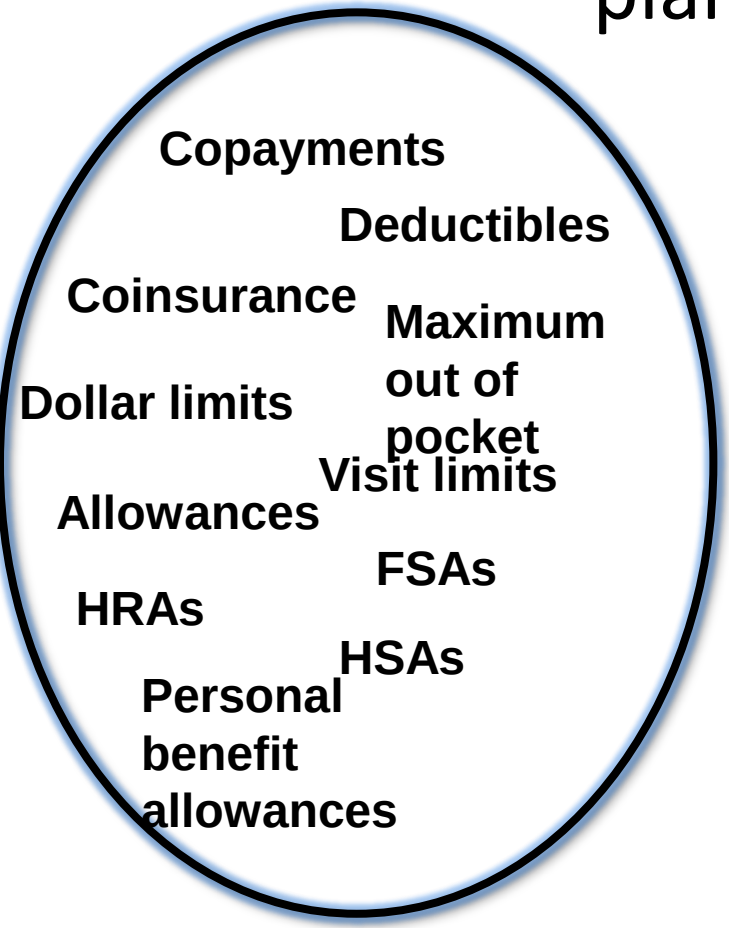
JUST CLICK HERE.

	Level 1	Level 2	Level 1	Level 2	Level 3
PHYSICIAN OFFICE SERVICES			**The first $500 of care per person is covered at 100% after applicable copays. Annual preventative services are covered at 100% after applicable copay and do not count towards your $500 benefit allowance.**		
PCP Office Visits	$15 copay	50% after deductible	$25 copay, deductible will apply	$25 copay, deductible will apply	50% after deductible
Specialist Office Visit	$30 copay	50% after deductible	$40 copay, deductible will apply	$40 copay, deductible will apply	50% after deductible
Other Services	90% after deductible	50% after deductible	100% after deductible	100% after deductible	50% after deductible
Diagnostic Lab/Xray	90% after deductible	50% after deductible	100% after deductible	100% after deductible	50% after deductible
Allergy Testing	90% after deductible	50% after deductible	100% after deductible	100% after deductible	50% after deductible
Allergy Serum	50% up to $1500, then 100%	50% up to $1500, then 100%	50% up to $1500, then 100%	50% up to $1500, then 100%	50% up to $1500, then 100%
Allergy Injections	100% after $5 copay	50% after deductible	100% after $5 copay	100% after $5 copay	50% after deductible
PREVENTIVE SERVICES					
Routine Child Care (through age 17)					
- Immunizations	100%	50% after deductible	100%	100%	Not covered
- Exam	100% after copay	50% after deductible	100% after copay	100% after copay	Not covered
Routine Adult Care (age 18 and older)					
- Annual Exam	100% after copay	50% after deductible	100% after copay	100% after copay	Not covered
- First Mammogram of the year (up to $300)	100%	50% after deductible	100%	100%	Not covered
- Routine Pap Smears (1 per plan year)	100%	50% after deductible	100%	100%	Not covered
- Prostate Antigen Testing (1 per plan year)	100%	50% after deductible	100%	100%	Not covered
- Routine Colonoscopy	100%	50% after deductible	100%	100%	Not covered
IMMEDIATE CARE					
Urgent Care	100% after $50 copay (all levels)	100% after $50 copay (all levels)	100% after $50 copay and deductible	100% after $50 copay and deductible (Level 1)	100% after deductible (Level 1)
Emergency Care	90% after $100 copay* and deductible	80% after $100 copay* and deductible (Level 1)	100% after $100 copay and deductible	100% after $100 copay and deductible (Level 1)	100% after $100 copay and deductible (Level 1)
Non-Emergency Care at ER	Not covered	Not covered	Not covered	Not covered	Not covered
Emergency Ambulance	80%	80%	80%	80%	80%

*Emergency care at out-of-network facilities is covered at 80% in the EPOPlus Plan.
**Convenience care like Minute Clinic may require either a PCP or specialist office visit copay. Copayments vary by provider.

(Continued on following page)

A lot of standard economics goes into plan design



- Plan designs are way too complicated
- Patients typically don't understand coinsurance, deductibles
- Only 11% of patients can accurately estimate cost of care
- We worked with one of the major plans to decide a new 'simple plan'

Loewenstein G, Friedman JY, McGill B, Ahmad S, Beshears J, Choi J, Kolstad J, Laibson D, Madrian B, List J, Volpp KG Journal of Health Economics 32(5): 850-862, 2013.

Firefox

Humana Simplicity is Different From Ot...

www.humana.com/agents/products/insurance/medical/humana_simplicity.aspx

humana simplicity

Humana

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Medical Plans

- Traditional Plans
- HDHP
- PCA Plan
- CoverageFirst
- SmartSuite
- Humana Simplicity

Log In or Register

User ID

Password

Log In

Forgot ID/Password?

Insurance Products » Medical Plans

Humana Simplicity

Humana Simplicity

At Humana, we don't think a medical plan has to be hard to understand – or afford. That's why we developed Humana Simplicity. It offers your clients outstanding medical coverage at a price that's affordable to them.

Humana Simplicity is different from other medical plans. When a member uses their plan for in-network healthcare services, they pay a copayment for that service – there's no deductible. This straightforward plan design makes it easier to administer, and easier for employees to understand their benefits and payment responsibilities. Which means employees will be more likely to utilize their medical plan effectively.

Key Benefits:

- Robust plans, and various networks options
- No in-network deductibles or coinsurance
- All copayments count toward maximum out-of-pocket expenses. Once the out-of-pocket-maximum has been reached, the plan will pay 100 percent of the eligible charges under the written terms of the policy.
- Preventive care services are covered at 100 percent for in-network providers
- Care from any provider in the network without a referral *

Medical

- Traditional Plans
- HDHP
- PCA Plan
- CoverageFirst
- SmartSuite®
- Humana Simplicity

Medical

- Traditional Plans
- HDHP
- PCA Plan
- CoverageFirst
- SmartSuite®

Video

What is Humana Simplicity?
A new straightforward medical

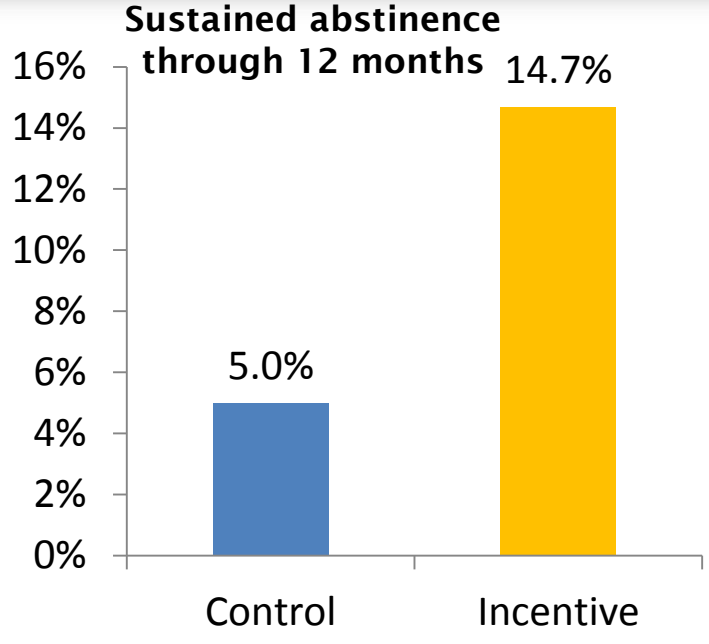
- Incentive Design: Unbundled rewards
- 878 General Electric employees, assigned to usual care (access to cessation counseling) or usual care + incentives worth $750

➢ GE implemented program based on this for 152,000 US employees in 2010

SPECIAL ARTICLE

A Randomized, Controlled Trial of Financial Incentives for Smoking Cessation

Kevin G. Volpp, M.D., Ph.D., Andrea B. Troxel, Sc.D., Mark V. Pauly, Ph.D., Henry A. Glick, Ph.D., Andrea Puig, B.A., David A. Asch, M.D., M.B.A., Robert Galvin, M.D., M.B.A., Jingsan Zhu, M.B.A., Fei Wan, M.S., Jill DeGuzman, B.S., Elizabeth Corbett, M.L.S., Janet Weiner, M.P.H., and Janet Audrain-McGovern, Ph.D.



Support: CDC R01 DP000100-01, RO1 DP001168-01

Volpp KG, et al. NEJM. 2009; 360: 699-709.

Effectiveness = Acceptance x Efficacy

ORIGINAL ARTICLE

Randomized Trial of Four Financial-Incentive Programs for Smoking Cessation

Scott D. Halpern, M.D., Ph.D., Benjamin French, Ph.D., Dylan S. Small, Ph.D., Kathryn Saulsgiver, Ph.D., Michael O. Harhay, M.P.H., Janet Audrain-McGovern, Ph.D., George Loewenstein, Ph.D., Troyen A. Brennan, M.D., J.D., David A. Asch, M.D., M.B.A., and Kevin G. Volpp, M.D., Ph.D.

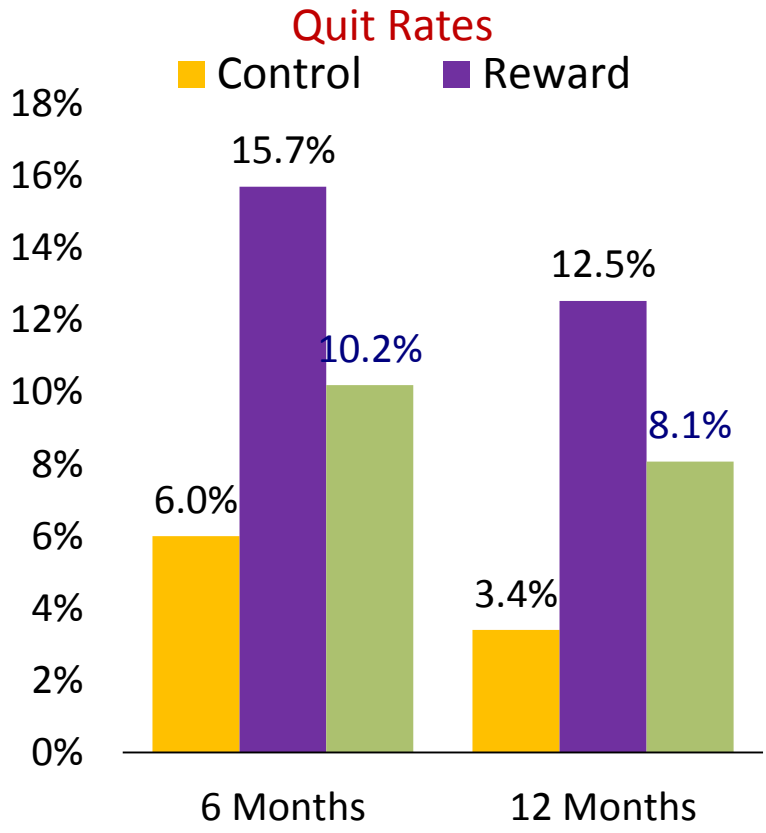
- Important question vis a vis use of precommitment/deposit contracts to improve health
- To be effective, interventions need to be:
  1. Acceptable to targeted smokers
  2. Efficacious among those who accept the intervention

Support: NCI R01CA159932, NIA RC2AG036592, and CVS Health

Halpern SD, Asch DA, Volpp KG. BMJ 2012; 344: e522

Rewards are better than deposits for populations

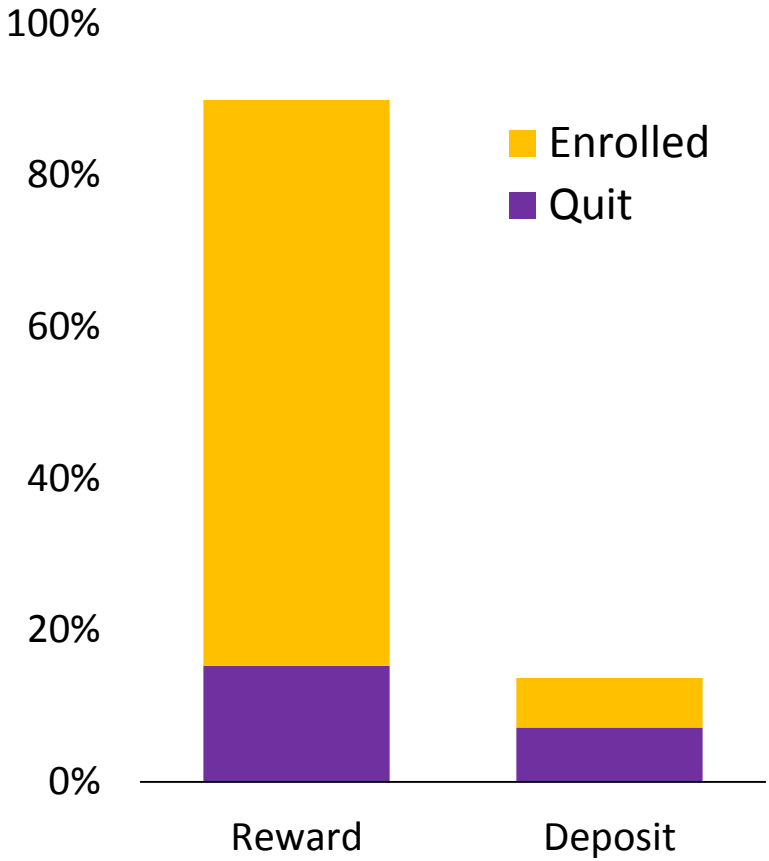
- 2,538 employees of CVS
- 5-arm Randomized controlled trial
  1. Information about smoking cessation programs
  2. Individual or group rewards of up to $800 for confirmed quit at 6 mos.
  3. Individual or group deposit contract of $150 returned + $650 for confirmed quit at 6 mos.



Halpern, et al. NEJM 2015

Deposits are better than rewards for individuals

- 90% were willing to enter a reward program
  - » **17.1% of those quit**
- Only 13.7% were willing to put their own money down.
  - » **52.3% of those quit**
- All else equal, for people willing to put money down, the quit rate will be 13.2% higher with deposits than rewards.



Halpern, et al. NEJM 2015

CVS Health 700 Good Reasons to Quit

How does the program work?

If you're a tobacco user who wants to quit, here's how to get started.

Step 1
Log on to https://700GoodReasons.CVS.com. Your progress and confidential data will be tracked and stored here.

Step 2
Make a $50 commitment to quit tobacco use. Agree to participate in the program by signing an authorization form and making a $50 commitment. Why? Research shows that people who invest their own money into a smoking cessation program are more likely to quit for good.

Step 3
Undergo tobacco screenings. To track your progress, you'll undergo tobacco screenings at the start of the program, and again at 6 months and 12 months. You can complete the tests at MinuteClinic® or a Quest Diagnostics Patient Service Center®. Visit https://700GoodReasons.CVS.com for full details on the tobacco-screening process.

Step 4
Use resources to help you quit. We encourage you to use any and all tobacco cessation methods and resources that work best for you, including the CVS Health resources listed to the right.

Step 5
Earn $700. If you test tobacco-free at 6 months, you'll earn $200. If you're tobacco-free at 12 months, you'll earn $500, and your initial $50 commitment will be paid back to you. That's a grand total of $700! All program payments are coordinated directly through the CVS Health payroll system.

Wellness resources to help you quit

Take advantage of CVS Health resources.

We know there are many ways to quit, and every journey is unique. Regardless of the quit method you choose, rest assured that a number of CVS Health wellness resources are available to help make your journey a successful one.

MinuteClinic Start to Stop® Program
Work 1-on-1 with a trained nurse practitioner to develop a personalized smoking cessation plan.

Telephonic Health Coaching with WebMD
Coaches help with all areas of wellness, including smoking cessation.

WebMD Wellness Portal
Connect with a number of supportive health resources, assessments and trackers.

Healthy Living Community
Sound off on myLife's tobacco-free discussion boards and find motivation from colleagues who are on this journey with you.

LifeScope for You
This 24/7 health benefit provides resources, consultations and referrals to support your every-day needs, including tobacco cessation support. Available by phone at 800-789-8990.

American Cancer Society® Quit For Life Program®
Dial 844-265-4321 to connect with a live, toll-free quit hotline operated by the American Cancer Society Quit For Life Program.

Scan to watch inspiring videos about the 700 Good Reasons program.

WebMD Wellness Portal

The WebMD Wellness Portal is now available to all CVS Health colleagues, including those not enrolled in a CVS Health medical plan. Visit the **myHR.cvs.com** Health page and click on WebMD or log on to **webmdhealth.com/wellrewards** to access these great tools:

TELEPHONIC HEALTH COACHING
Connect with coaches to receive personalized care programs and address any health concerns.

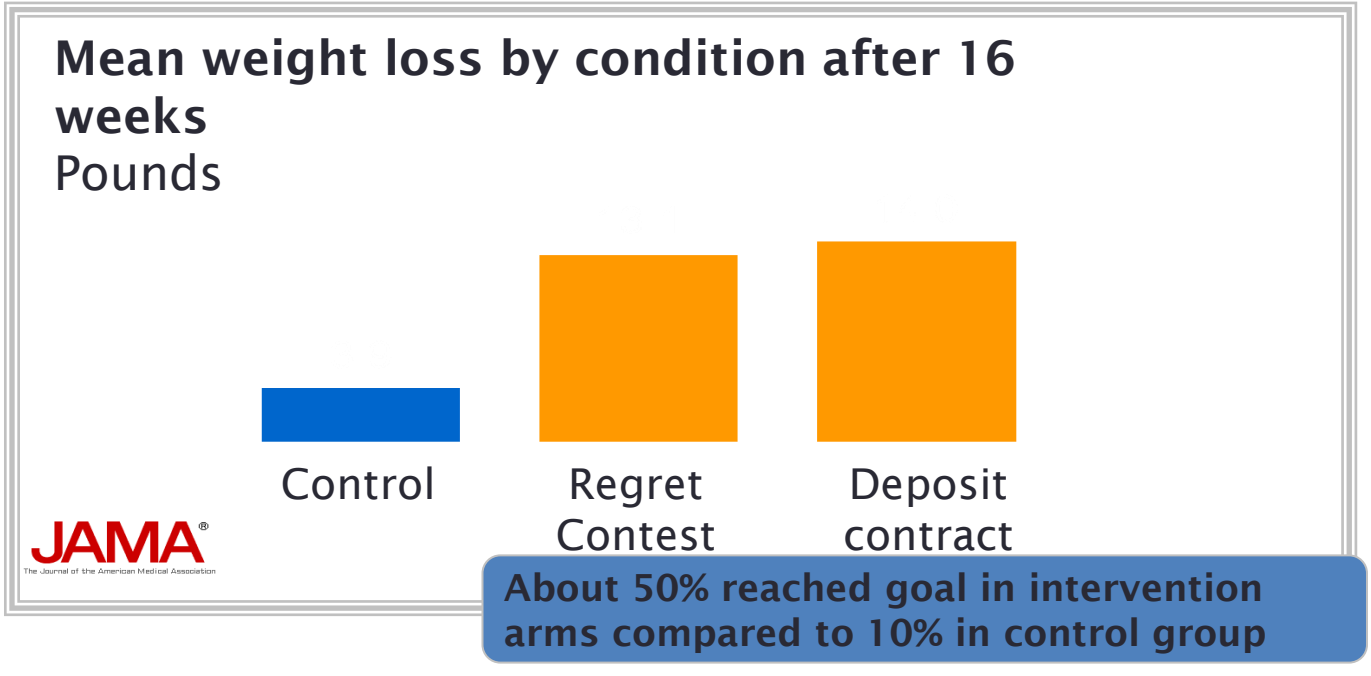
HEALTH ASSESSMENTS
Complete the online Health Assessment to understand your health risks and receive a personalized action plan.

HEALTH CHALLENGES AND TRACKERS
Get motivated and participate in achievable challenges to earn Values in Action points.

CVS Health

Launched nationwide June 1, 2015

Lotteries and deposit contracts are both effective in achieving initial weight loss



Volpp, KG, Troxel AB, Norton, Fassbender, Loewenstein *JAMA* 2008;300:2631-2637

Funding by NIA, NICHD, USDA, Hewlett Foundation

Social incentives are a high impact, cost effective way of improving glycemic control

Incentive Type

Peer mentoring
Outcomes-based, financial incentive

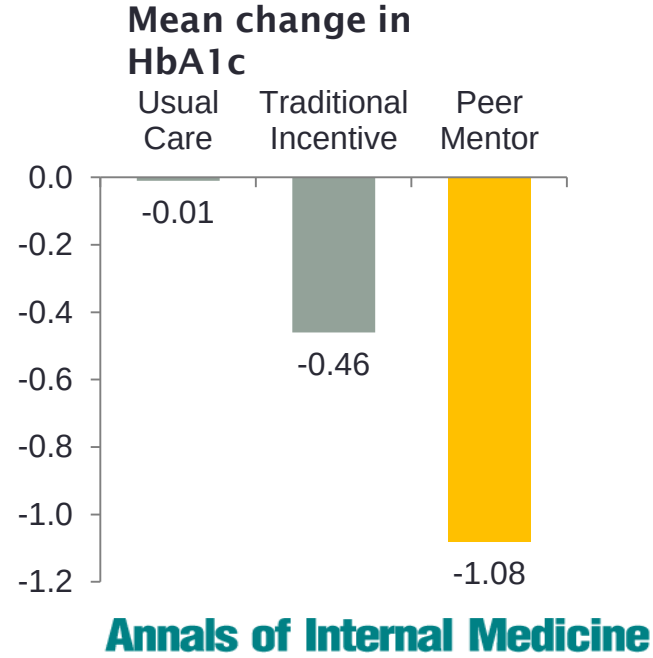
Overview

6 month randomize control trial

- Control – usual care
- Peer mentor – talk at least weekly
- Incentives - $100 to drop one point; $200 to drop two points or achieve HbA1c of 6.5%

Impact

>1 point drop in HbA1c levels



Annals of Internal Medicine

Long JA, Jahnle E, Loewenstein G, Richardson D, Volpp KG. Annals of Internal Medicine. 2012.

Funded by NIA as Roybal Center pilot

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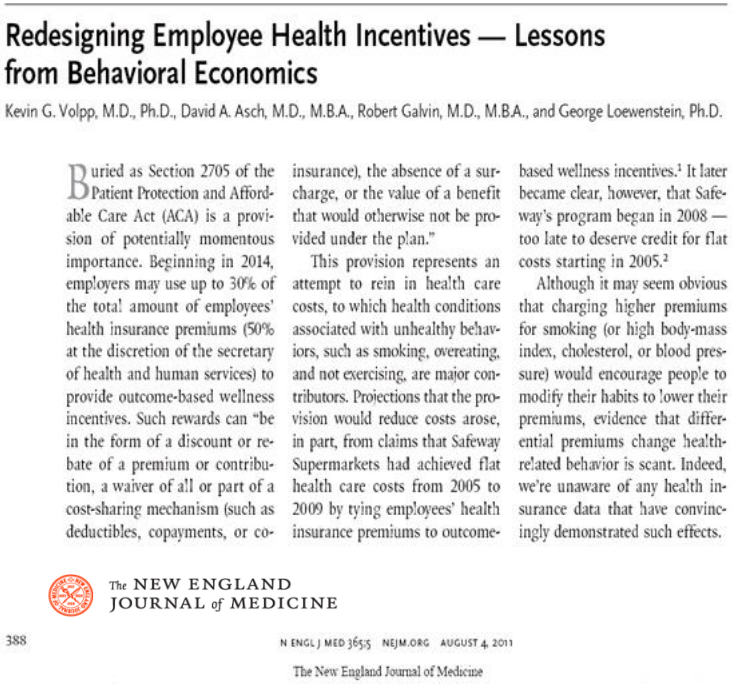
Making incentive programs more effective in changing employee behavior. . .



Redesigning Employee Health Incentives — Lessons from Behavioral Economics

Kevin G. Volpp, M.D., Ph.D., David A. Asch, M.D., M.B.A., Robert Galvin, M.D., M.B.A., and George Loewenstein, Ph.D.

Buried as Section 2705 of the Patient Protection and Affordable Care Act (ACA) is a provision of potentially momentous importance. Beginning in 2014, employers may use up to 30% of the total amount of employees' health insurance premiums (50% at the discretion of the secretary of health and human services) to provide outcome-based wellness incentives. Such rewards can "be in the form of a discount or rebate of a premium or contribution, a waiver of all or part of a cost-sharing mechanism (such as deductibles, copayments, or coinsurance), the absence of a surcharge, or the value of a benefit that would otherwise not be provided under the plan."

This provision represents an attempt to rein in health care costs, to which health conditions associated with unhealthy behaviors, such as smoking, overeating, and not exercising, are major contributors. Projections that the provision would reduce costs arose, in part, from claims that Safeway Supermarkets had achieved flat health care costs from 2005 to 2009 by tying employees' health insurance premiums to outcome-based wellness incentives.[1] It later became clear, however, that Safeway's program began in 2008 — too late to deserve credit for flat costs starting in 2005.[2]

Although it may seem obvious that charging higher premiums for smoking (or high body-mass index, cholesterol, or blood pressure) would encourage people to modify their habits to lower their premiums, evidence that differential premiums change health-related behavior is scant. Indeed, we're unaware of any health insurance data that have convincingly demonstrated such effects.

The NEW ENGLAND JOURNAL of MEDICINE

388 N ENGL J MED 365;5 NEJM.ORG AUGUST 4, 2011

The New England Journal of Medicine

- Don't just adjust premiums!
- Consider applying:
  - Present bias (frequent feedback)
  - Mental accounting (unbundle rewards)
  - Loss framing or precommitment contracts
  - Probabilistic rewards
  - Social incentives

Source: Volpp KG, Asch DA, Galvin R, Loewenstein G. NEJM. 2011 365: 388-390,

The 5,000 hour problem (and opportunity)

- 3-4 hours/ year: Time a typical patient with chronic disease may spend with a doctor
- 5,000+ hours: Waking hours elsewhere
- As much as 40% premature mortality in US due to behavior
- Advances in wireless technologies create new opportunities for physicians to influence patient behavior and more efficiently care for populations

The NEW ENGLAND JOURNAL of MEDICINE

➢ Successful population health management will require engagement of high-risk patients in improving health behaviors

Source: Asch DA, Muller R, Volpp KG. 2012. NEJM

Creating an ecosystem to address the 5,000 hours problem. . .

Data Capture

Participant "passively" takes medication, uses scale, pedometer etc.

Data Transmission

Device automatically transmits information to server

Rewards Communication

Program captures behavior and provides feedback to participant

Funds Fulfillment

Funds electronically transferred to participant

Penn Way to Health funded by National Institute of Aging RC2 AG036592-01 (Asch and Volpp PIs)

Wharton University of Pennsylvania

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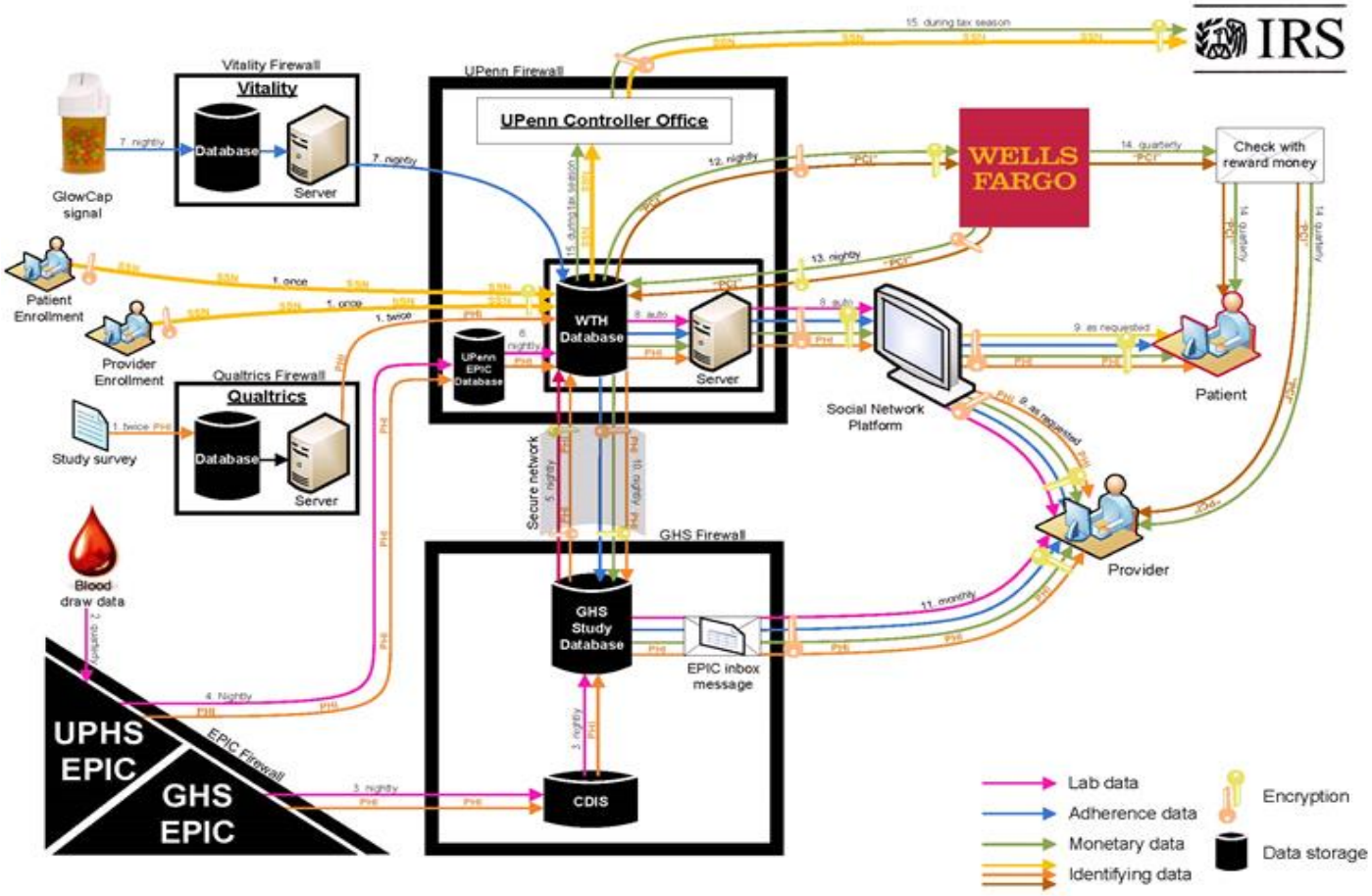
What is required for scale?

- Scale is impossible without technology
- Technology is useless if it doesn't modify behavior
- Many of the high-risk patients for whom this would make economic sense are not engaged

Asch DA, Muller RW, Volpp KG. Automated hovering in health care. NEJM 2012

Way to Health integration



Penn Way to Health funded by National Institute of Aging RC2 AG036592-01 (Asch and Volpp PIs)

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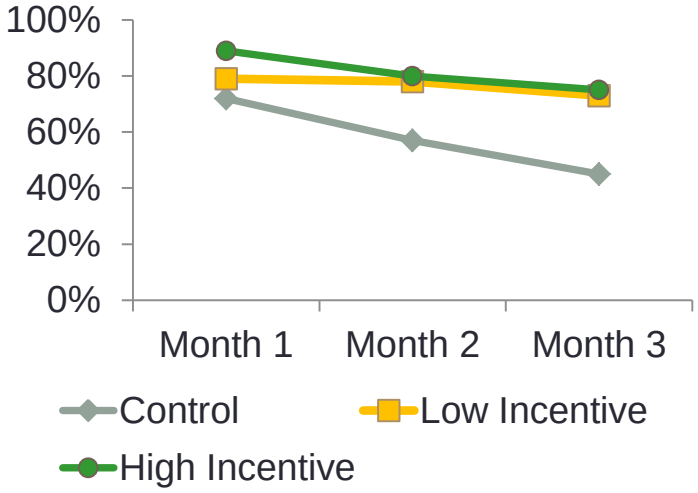
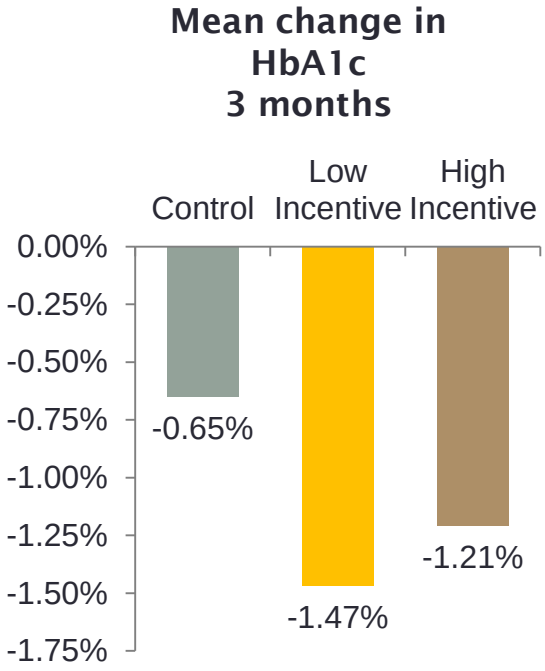
The technology is necessary but not sufficient. . .





Sen A, Sewell T, Bellamy S, Asch DA, Volpp KG
2014 JGIM Patel, Asch, Volpp JAMA 2015

Funded by National Institute of Aging RC2 AG036592-01 (Asch and Volpp PIs)

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CMMI – "Automated Hovering to Improved Medication Adherence After Heart Attack"

Compound intervention with goal of achieving the triple aim

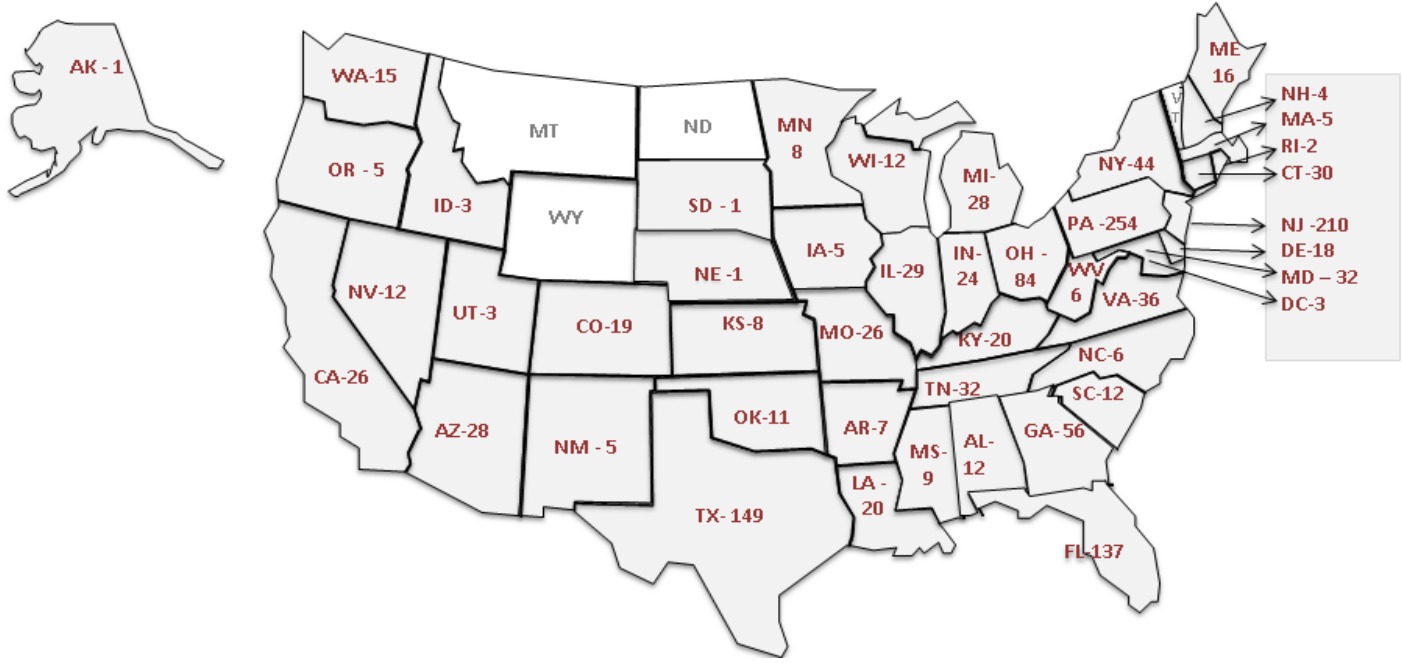
1. Wireless pill bottles for meds
2. Daily lottery incentives
3. Social incentive - Friend or family member get automated alerts
4. Engagement advisor (much lower personnel ratios)

➢Made possible by collaboration with Aetna, Humana, IBC, Horizon BCBS, HealthFirst, CMS

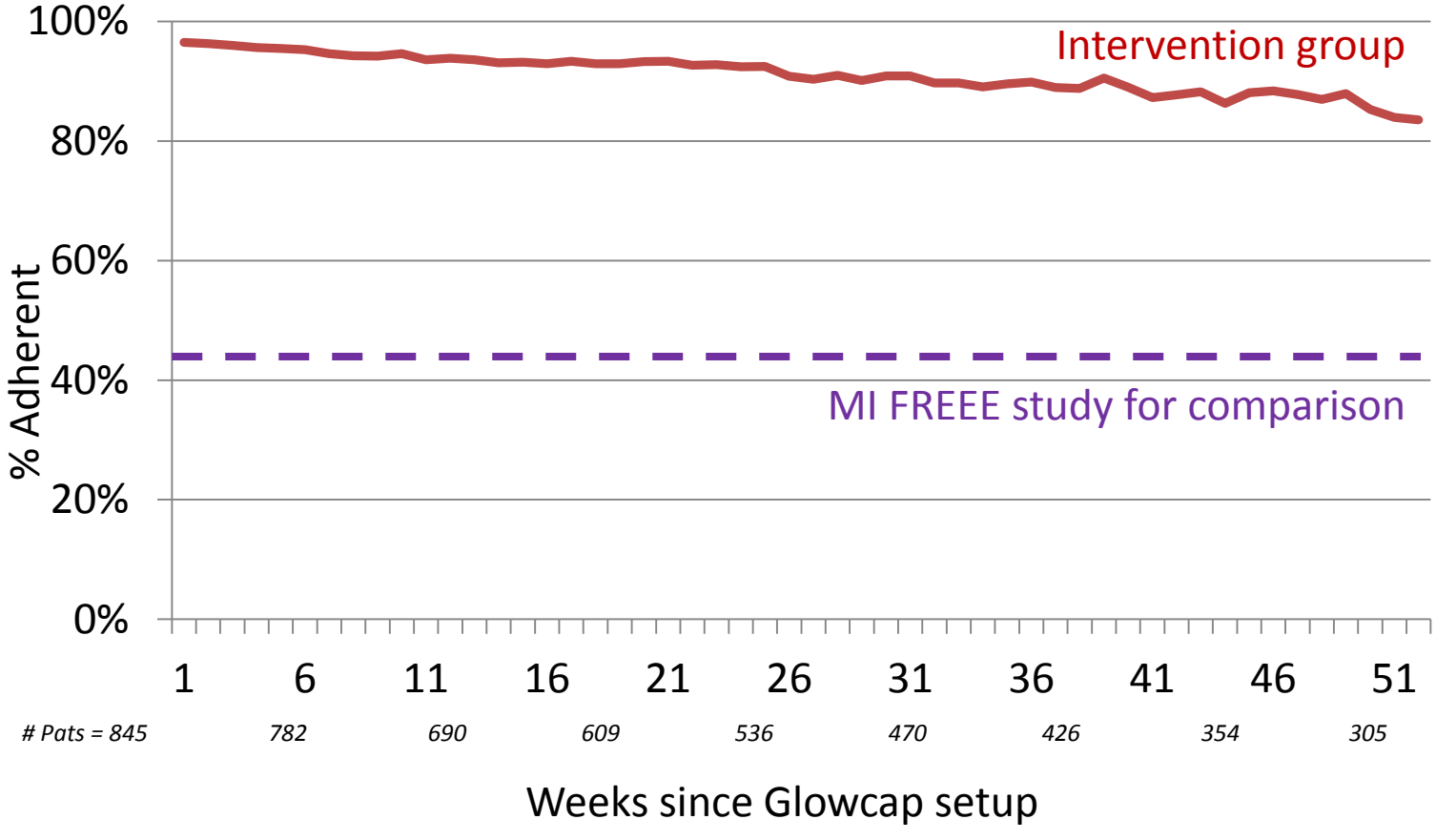
Work in partnership with Asch DA (Co-PI), Troxel AB, Terwiesch C, Mehta S, Kolansky D, Drachman B. Funding Support from CMMI 1-CIC-MS-331009

Penn Medicine

1503 participants from 45 states and DC



Glowcap Adherence (among ~85% setup)



Data through 12/31/2014

Data for New Models of Chronic Care Delivery. . .

- Smoking cessation (CVS Health employees) - **NCI**
- Obesity - Group incentives, deposit contracts, premium adjustments vs. lotteries (CHOP, Horizon, UPHS employees; Weight Watchers) – **NIA, Horizon BCBS, UPHS, Weight Watchers**
- Potential medical home 2.0 initiatives:
  - Glycemic control through remote monitoring; peer mentoring; walking programs; CPAP use (UPHS) – **NIA, NIDDK**
- Medication adherence
  - Habit formation for medication adherence (CVS Health, UPHS, UPS, Home Depot, Aetna) - **NIA**
  - Process vs Outcomes Incentives – CVS Health, Marriott - **NHLBI**
  - Automated hovering post-AMI (UPHS, Aetna, Humana, Horizon BCBS, Independence BCBS, HealthFirst) – **CMMI**
  - Patient vs. Provider incentives for high-risk cardiac patients (UPHS, Geisinger, Harvard Vanguard Medical Associates) - **NIA**

Moving towards the future

- 2014
  - Reactive, visit-based model
  - Health care financing based predominantly on FFS
  - Providers with little data to guide decision making
  - Limited telemonitoring consists of giving patients devices and hoping they'll use them
- 2016+
  - Proactive, non-visit-based model
  - Health financing based on bearing risk for populations
  - Automated feedback to patients and providers on behaviors
  - Behavioral economic strategies to drive higher engagement

Thank you!

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